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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/081,498	02/22/2002	Vladimir Anatolyevich Aksyuk	28-59-1	1508
7590	03/17/2004		EXAMINER	
Ryan, Mason & Lewis, LLP Suite 205 1300 Post Road Fairfield, CT 06430			CONNELLY CUSHWA, MICHELLE R	
			ART UNIT	PAPER NUMBER
			2874	

DATE MAILED: 03/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/081,498	AKSYUK ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Michelle R. Connelly-Cushwa	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 08 January 2004.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-21 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-3,5-9,11-16 and 18-21 is/are rejected.  
 7) Claim(s) 4,10 and 17 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 02 May 2002 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Response to Amendment***

Applicant's Amendment filed January 8, 2004 has been fully considered and entered.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 1-3, 5-9, 11-16 and 18-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Janssen (US 2003/0095777).**

Regarding claims 1 and 7; Figures 2 and 3 of Janssen discloses an optical device comprising:

- at least one waveguide for carrying an optical signal (12<sub>1</sub>-12<sub>n</sub> in Figure 2 and 212 in Figure 3); and
- at least one mirror (4<sub>1</sub>-4<sub>n</sub> in Figure 2 and 204 in Figure 3) having an adjustable position to vary a path length of the optical signal, wherein the at least one mirror reflects the optical signal substantially into the at least one waveguide (see paragraphs [0032]-[0034]);

- wherein an optical signal is received, a position of the mirror is adjusted along a first path of the signal and the signal is reflected substantially into the first path by the mirror.

Regarding claims 2 and 8; the mirror is controlled by a micromachine control element (a MEMS electrostatic actuator, see paragraph [0034]) that positions the mirror in a desired position along an optical path.

Regarding claims 3 and 9; the mirrors (4 in Figure 2 and 204 in Figure 3) are positioned at an end of the at least one waveguide (12 in Figure 2 and 212 in Figure 3).

Regarding claims 5, 6 and 11; the optical signal is a wavelength-division multiplexed (WDM) signal comprising N wavelength channels and the optical device further comprises a demultiplexer (2 in Figure 2 and 202 in Figure 3) for producing a plurality of demultiplexed output signals from the input WDM signal and at least one mirror associated with each of the N wavelength channels, wherein a plurality of the waveguides carry each of the N wavelength channels (see paragraphs [0032]-[0034]).

Regarding claims 12 and 19; Figures 2 and 3 of Janssen disclose an optical switch, comprising:

- means for receiving an optical signal (6 in Figure 2 and the input of 202 in Figure 3);
- means for splitting the optical signal into at least two optical components (2 in Figure 2 and 202 in Figure 3);
- a movable mirror (4 in Figure 2 and 204 in Figure 3) for adjusting a phase of at least one of the optical components by adjusting a position

of the mirror along a first path of the optical component, wherein the movable mirror reflects the at least one of the optical components substantially into the first path of the optical component; and

- means for recombining the at least two optical components (2 in Figure 2 and 202 in Figure 3);
- wherein an optical signal is received, the optical signal is split into at least two components, a phase of at least one of the components is adjusted by adjusting a position of the mirror along a fist path of the optical component, and the at least one of the optical components is reflected substantially into the first path of the optical component by the mirror.

Regarding claim 13; the means for receiving comprises at least one waveguide (an input waveguide, 6, in Figure 2 and the input waveguide of 202 in Figure 3) for carrying the optical signal.

Regarding claim 14; the means for splitting and recombining the optical signal is an arrayed waveguide router (202, see Figure 3).

Regarding claims 15 and 20; the mirror is controlled by a micromachine control element (MEMS) that positions the mirror in a desired position along an optical path (see paragraph [0034]).

Regarding claim 16; the mirror is positioned at an end of the at least one waveguide (see Figures 2 and 3).

Regarding claims 18 and 21; the optical signal is a wavelength-division multiplexed (WDM) signal comprising N wavelength channels and the optical switch further comprises a demultiplexer (2 in Figure 2 and 202 in Figure 3) for producing a plurality of demultiplexed output signals from the input WDM signal and at least one mirror associated with each of the N wavelength channels.

***Allowable Subject Matter***

Claims 4, 10 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art cited on attached form PTO-892 is the most relevant prior art known, however, the invention of claims 4, 10 and 17 distinguishes over the prior art of record for the following reasons.

Regarding claim 4; the claim is allowable over the prior art of because none of the references either alone or in combination disclose or render obvious an optical device as defined in claim 4, wherein the mirror is fabricated in the waveguide material deposited on the substrate in combination with the limitations of claim 1 from which claim 4 depends.

Regarding claim 10; the claim is allowable over the prior art of because none of the references either alone or in combination disclose or render obvious a method as defined in claim 10, wherein the mirror is fabricated from a waveguide deposited on a substrate in combination with the limitations of claim 7 from which claim 10 depends.

Regarding claim 17; the claim is allowable over the prior art of because none of the references either alone or in combination disclose or render obvious an optical switch as defined in claim 17, wherein the mirror is fabricated from the waveguide material deposited on a substrate in combination with the limitations of claim 12, from which claim 17 depends.

Hence, there is no reason or motivation for one of ordinary skill in the art to use the prior art of record to make the invention of claims 4, 10 and 17.

### ***Response to Arguments***

Applicant's arguments, see pages 6-8, filed January 8, 2004, with respect to the rejection(s) of claim(s) 1-9 and 11-21 under 35 U.S.C. § 102(e) over Yu et al. have been fully considered and are persuasive in view of the amendments to the claims. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Janssen (US 2003/0095777).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (571) 272-2345. The examiner can normally be reached 9:00 AM to 7:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general or clerical nature should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562.

*MRCC*  
Michelle R. Connelly-Cushwa  
Patent Examiner  
March 2, 2004

*Akmal*  
AKM ENAYET ULLAH  
PRIMARY EXAMINER